

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-10 (Canceled).

Claim 11 (New): A continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide, wherein the mixture formed in the synthesis which contains the 1,2-propylene glycol is separated in a dividing wall column into low-, intermediate- and high-boiling fractions and the 1,2-propylene glycol is taken off as intermediate boiler at the side offtake of the column.

Claim 12 (New): The process as claimed in claim 11, wherein the dividing wall column consists of at least two thermally coupled columns.

Claim 13 (New): The process as claimed in claim 11, wherein the dividing wall column has from 15 to 60 theoretical plates.

Claim 14 (New): The process as claimed in claim 11, wherein the pressure at the top of the dividing wall column is from 5 to 500 mbar.

Claim 15 (New): The process as claimed in claim 11, wherein the distillation temperature at the side offtake of the dividing wall column is from 50 to 200 °C.

Claim 16 (New): The process as claimed in claim 11, wherein the sum of the key components in the purified 1,2-propylene glycol is less than 1 % by weight, with the sum of 1,2-propylene glycol and key components being 100 % by weight.

Claim 17 (New): The process as claimed in claim 11, wherein the dividing wall column has from 15 to 60 theoretical plates, the pressure at the top of the dividing wall column is from 5 to 500 mbar and the distillation temperature at the side offtake of the dividing wall column is from 50 to 200 °C.

Claim 18 (New): The process as claimed in claim 17, wherein the sum of the key components in the purified 1,2-propylene glycol is less than 1 % by weight, with the sum of 1,2-propylene glycol and key components being 100 % by weight.

Claim 19 (New): The process as claimed in claim 11, wherein the mixture containing 1,2-propylene glycol is prepared in a process comprising at least the steps (i) to (iii):

- (i) reaction of the hydroperoxide with propylene to give a product mixture comprising propylene oxide and unreacted hydroperoxide,
- (ii) separation of the unreacted hydroperoxide from the mixture resulting from step (i),
- (iii) reaction of the hydroperoxide which has been separated off in step (ii) with propylene.

Claim 20 (New): The process as claimed in claim 19, wherein an isothermal fixed-bed reactor is used in step (i), an adiabatic fixed-bed reactor is used in step (iii) and a separation apparatus is used in step (ii).

Claim 21 (New): The process as claimed in claim 19, wherein hydrogen peroxide is used as hydroperoxide and propylene is brought into contact with a heterogeneous catalyst during the reaction.

Claim 22 (New): A continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide, wherein the mixture formed in the synthesis which contains the 1,2-propylene glycol is separated in a dividing wall column into low-, intermediate- and high-boiling fractions and the 1,2-propylene glycol is taken off as intermediate boiler at the side offtake of the column, and wherein the mixture containing 1,2-propylene glycol is prepared in a process comprising at least the steps (i) to (iii):

- (i) reaction of the hydroperoxide with propylene to give a product mixture comprising propylene oxide and unreacted hydroperoxide,
- (ii) separation of the unreacted hydroperoxide from the mixture resulting from step (i),
- (iii) reaction of the hydroperoxide which has been separated off in step (ii) with propylene.

Claim 23 (New): The process as claimed in claim 22, wherein the dividing wall column has from 15 to 60 theoretical plates, the pressure at the top of the dividing wall column is from 5 to 500 mbar and the distillation temperature at the side offtake of the dividing wall column is from 50 to 200 °C.

Claim 24 (New): The process as claimed in claim 22, wherein the sum of the key components in the purified 1,2-propylene glycol is less than 1 % by weight, with the sum of 1,2-propylene glycol and key components being 100 % by weight.

Claim 25 (New): The process as claimed in claim 22, wherein an isothermal fixed-bed reactor is used in step (i), an adiabatic fixed-bed reactor is used in step (iii) and a separation apparatus is used in step (ii).

Claim 26 (New): The process as claimed in claim 22, wherein hydrogen peroxide is used as hydroperoxide and propylene is brought into contact with a heterogeneous catalyst during the reaction.

Claim 27 (New): A continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide, wherein the mixture formed in the synthesis which contains the 1,2-propylene glycol is separated in a dividing wall column into low-, intermediate- and high-boiling fractions and the 1,2-propylene glycol is taken off as intermediate boiler at the side offtake of the column, and wherein the mixture containing 1,2-propylene glycol is prepared in a process comprising at least the steps (i) to (iii):

- (i) reaction of the hydrogen peroxide with propylene in an isothermal fixed-bed reactor to give a product mixture comprising propylene oxide and unreacted hydroperoxide, where propylene is brought into contact with a heterogeneous catalyst during the reaction,
- (ii) separation of the unreacted hydrogen peroxide from the mixture resulting from step (i) in a separation apparatus,

- (iii) reaction of the hydrogen peroxide which has been separated off in step (ii) with propylene in an adiabatic fixed-bed reactor,

wherein the dividing wall column has from 15 to 60 theoretical plates, the pressure at the top of the dividing wall column is from 5 to 500 mbar and the distillation temperature at the side offtake of the dividing wall column is from 50 to 200 °C, and wherein the sum of the key components in the purified 1,2-propylene glycol is less than 1 % by weight, with the sum of 1,2-propylene glycol and key components being 100 % by weight.

Claim 28 (New): An apparatus for carrying out a continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide with hydroperoxide and propylene, wherein the apparatus comprises at least one isothermal fixed-bed reactor and one adiabatic fixed-bed reactor and also a separation apparatus in which unreacted hydroperoxide is separated, and at least one dividing wall column for purifying the 1,2-propylene glycol by distillation, which dividing wall column is equipped with an inlet via which wastewater of the propylene oxide synthesis comprising 1,2-propylene glycol is fed into the dividing wall column, and wherein a reaction of propylene with hydroperoxide is performed in the isothermal reactor to give a product mixture comprising propylene oxide and unreacted hydroperoxide, and wherein the hydroperoxide which has been separated off is reacted with propylene in the adiabatic reactor.